IN THE CLAIMS:

Claims 1-2 (Cancelled)

Claim 3 (Currently amended): ~~The method of claim 2 wherein~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the intervals between the intermittent applied potentials are less than the time necessary for the concentration of the analyte in the retention volume to equilibrate with that in the biological fluids in contact with the enclosure and the analyte is glucose and the redox enzyme is a glucose dehydrogenase.

Claim 4 (Currently amended): ~~The method of claim 2 wherein~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in

contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the intervals between the intermittent applied potentials are less than the time necessary for the concentration of the analyte in the retention volume to equilibrate with that in the biological fluids in contact with the enclosure and the analyte is glucose and the redox enzyme is a PQQ-dependent glucose dehydrogenase.

Claim 5 (Currently amended): ~~The method of claim 2 wherein~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the intervals between the intermittent applied potentials are less than the time necessary for the concentration of the analyte in the retention volume to equilibrate with that in the biological fluids in contact with the enclosure and the electron mediator is osmium (bis-bipyridyl) pyridinium chloride.

Claim 6 (Currently amended): ~~The method of claim 2 wherein~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the intervals between the intermittent applied potentials are less than the time necessary for the concentration of the analyte in the retention volume to equilibrate

with that in the biological fluids in contact with the enclosure and the redox enzyme and electron mediator are entrapped in a hydrophilic matrix on the electrode.

Claim 7 (Currently amended): ~~The method of claim 1~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the intervals are increased incrementally for a series of applied potentials and the concentration of the analyte in the biological fluid is determined as a function of the rate of increase in analyte concentration in the retention volume.

Claim 8 (Original): The method of claim 7 wherein the intervals between applied potential pulses are modified based on previous measurement results.

Claim 9 (Original): The method of claim 7 wherein the duration of the applied potential pulse is modified based on previous measurement results.

Claim 10 (Currently amended): ~~The method of claim 1~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the interval is substantially equal to or greater than the time required for the analyte concentration in the retention volume to equilibrate with that in the biological fluid.

Claim 11 (Currently amended): ~~The method of claim 1~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the

electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the analyte is glucose and the redox enzyme is a glucose dehydrogenase.

Claim 12 (Original): The method of claim 10 wherein the analyte is glucose and the redox enzyme is a PQQ-dependent glucose dehydrogenase.

Claim 13 (Cancelled).

Claim 14 (Currently amended): ~~The method of claim 1~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the analyte is glucose and the redox enzyme is a glucose dehydrogenase.

Claim 15 (Currently amended): ~~The method of claim 1~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the analyte is glucose and the redox enzyme is a PQQ-dependent glucose dehydrogenase

Claims 16-17 (Cancelled).

Claim 18 (Currently amended): ~~The method of claim 16~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and

the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the sensor additionally comprises at least a reference electrode and an auxiliary electrode and further comprising the steps of intermittently establishing predetermined level of current to flow between said working electrode and said auxiliary electrode at initially predetermined intervals, and measuring the potential difference between said working electrode and the reference electrode; maintaining said level of current flow at least for a period of time sufficient to determine the rate of change of potential necessary to maintain said current through said electrode with time, and correlating said potential with the potential for known concentrations of said analyte in the biological fluid and

wherein the intervals are increased incrementally and the concentration of the analyte in the biological fluid is determined as a function of the rate of increase in analyte concentration in the retention volume.

Claim 19 (Original): The method of claim 18 wherein the intervals are modified based on previous measurement results.

Claim 20 (Original): The method of claim 18 wherein the duration of current flow is modified based on previous measurement results.

Claim 21 (Currently amended): ~~The method of claim 16~~ A method for monitoring analyte concentration in a biological fluid by use of a sensor, the method comprising the steps of:

providing a sensor comprising a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor, an enclosure for said analyte retention volume, an electrode in contact with the hydrophilic medium, a redox enzyme in contact with the medium, and an electron transfer mediator for facilitating transfer of electrons between the enzyme and the electrode, the enzyme substantially not capable of transferring electrons to or from components of the biological fluid other than said analyte,

contacting the biological fluid with the sensor and at initially predetermined intervals intermittently applying a potential to the electrode sufficient to oxidize the electron mediator and sensing current through said electrode as a function of the duration of the applied potential,

maintaining the applied mediator oxidizing applied potential at least for a period of time sufficient to determine the rate of change of current with time through the electrode, and

correlating the current flow with the current flow for known concentrations of said analyte in the retention medium,

wherein the sensor additionally comprises at least a reference electrode and an auxiliary electrode and further comprising the steps of intermittently establishing predetermined level of current to flow between said working electrode and said auxiliary electrode at initially predetermined intervals, and measuring the potential difference between said working electrode and the reference electrode; maintaining said level of current flow at least for a period of time sufficient to determine the rate of change of potential necessary to maintain said current through said electrode with time, and correlating said potential with the potential for known concentrations of said analyte in the biological fluid and

wherein the interval is substantially equal to or greater than the time required for the analyte concentration in the retention volume to equilibrate with that in the biological fluid.

Claim 22 (Cancelled).

Claim 23 (Original): A sensor for use in electrochemical analysis of analyte levels in a biological fluid, the sensor comprising:

a volume of a hydrophilic medium for retaining an amount of analyte proportionate to the concentration of analyte in a biological fluid in contact with the sensor,

an enclosure for said analyte retention volume,

an electrode in contact with the hydrophilic medium,

and a hydrophilic matrix on the electrode, the hydrophilic matrix comprising poly(pyrrole-3-acetic acid), an electron mediator, and a redox enzyme.

Claim 24 (Original): The sensor of claim 23 wherein the electron mediator is osmium (bis-bipyridyl) pyridinium chloride.

Claim 25 (Original): The sensor of claim 24 wherein the redox enzyme is a glucose dehydrogenase.

Claim 26 (Original): The sensor of claim 23 wherein the redox enzyme is a glucose dehydrogenase.

Claim 27 (Original): The sensor of claim 23 wherein the redox enzyme is a PQQ-dependent glucose dehydrogenase.